MAY 13, 1950
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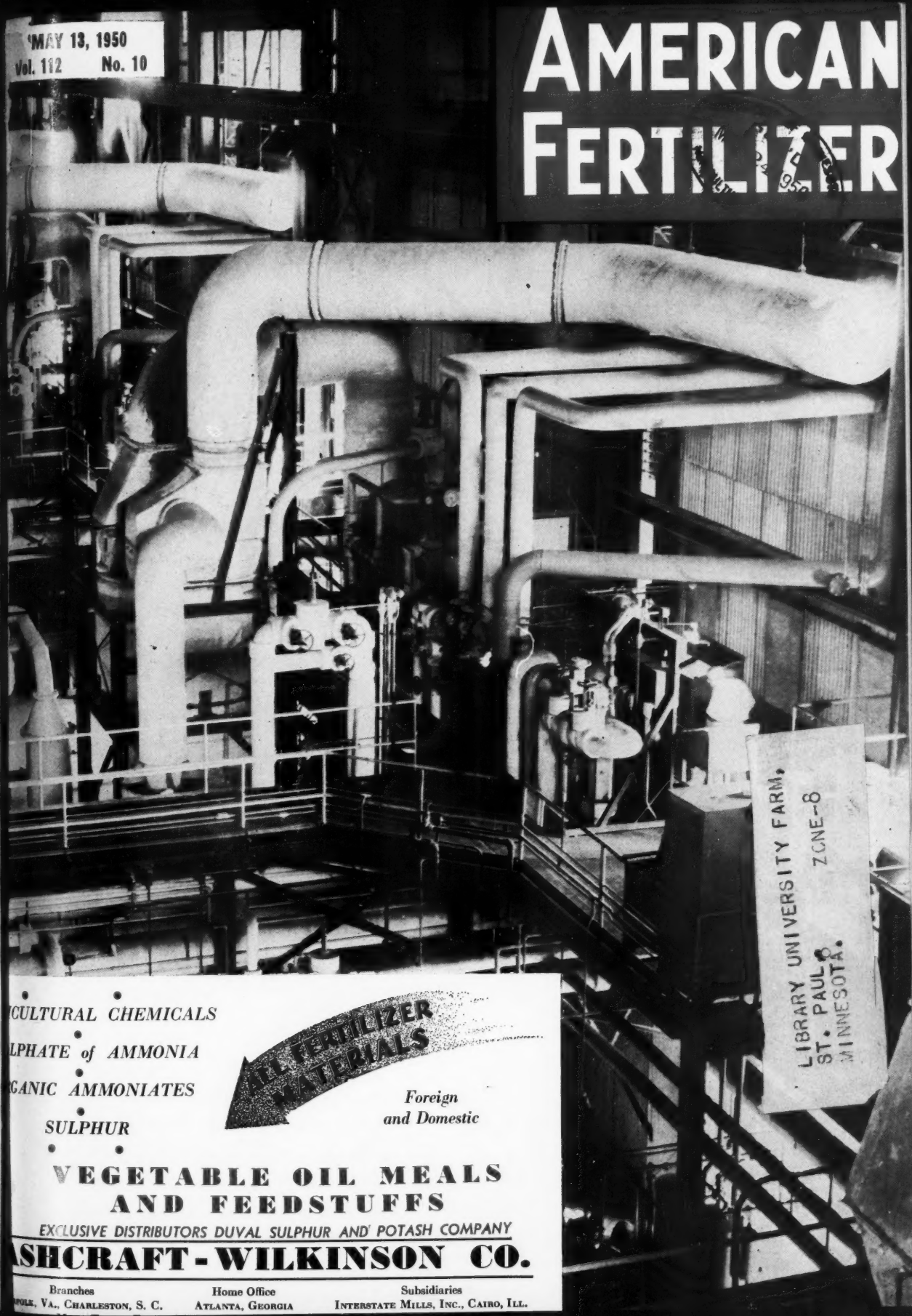
AMERICAN FERTILIZER



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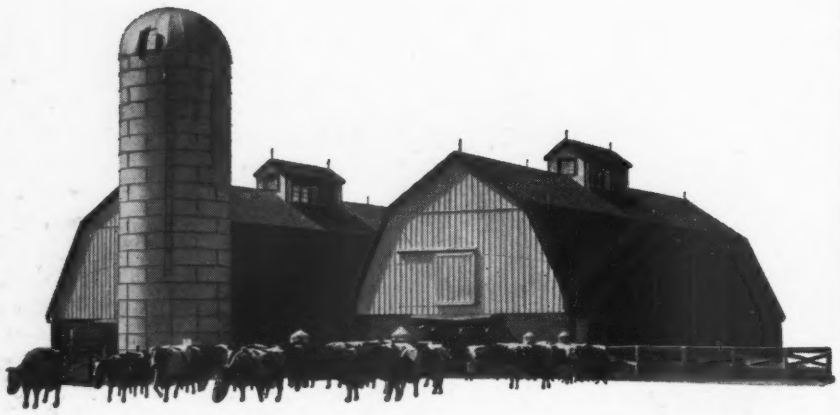

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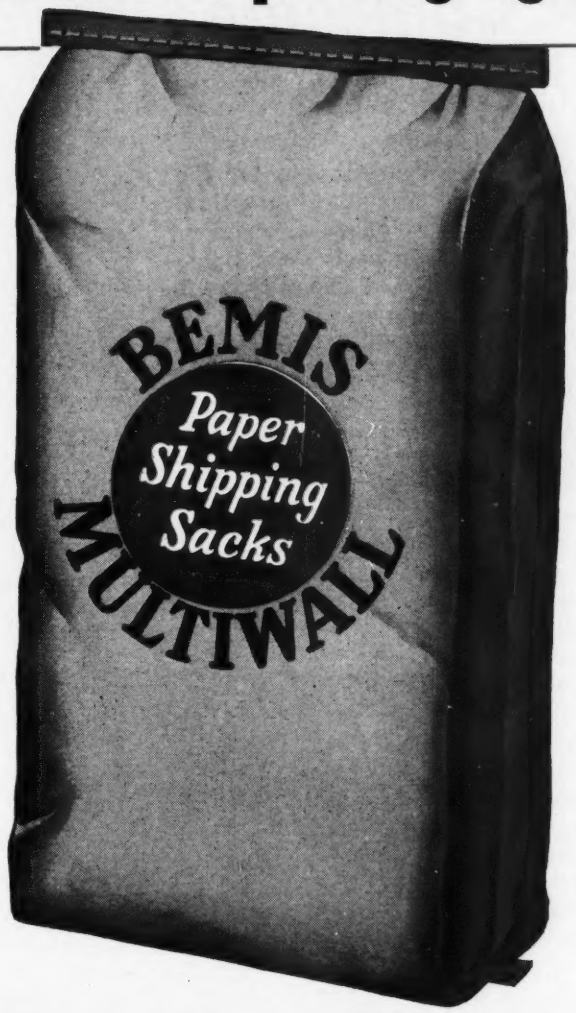

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How Can You Judge

The Job of a SALESMAN

Two Methods . . .

EVERY sales organization has three types of salesmen: the "star" who turns in a large percentage of the business, the "good" man who brings in his quota more or less each month, and the "sleeper" who is strictly a high cost and low production operator, who is apparently just along for the proverbial ride.

The constantly recurring problem of whether or not to fire the "sleeper" is intensified by the lack of sound standards upon which to judge a field salesman's performance.

Basically, there are two useful methods of evaluating a salesman's efforts: territory *management* and job *performance* based upon job analysis. How well is a man working his territory? How thoroughly is he performing all his duties, without specific reference to the volume of business and profit he creates?

Territory Management. At first glance it seems simple to measure the dollar volume of business a salesman obtains and thus calculate the profit derived from his activity and say that he is a success or not a success. However, everyone realizes that it is possible for one man to have a poor sales record due to factors entirely beyond his control. Some of these conditioning factors include the nature of the territory he works, the amount of cooperation he gets from his manager and company, the length of service with the company, how well he is established in his territory, previous experiences, health, and ability to grow and improve on the firing line.

We might say actually that success in volume of sales equals ability plus opportunity. Assuming that we have field men of adequate ability, the next problem is to provide them the maximum opportunity for them to succeed . . . through good territory management. Accompanying this article is a checklist of factors to be considered in good territory management so that the territory is thoroughly investigated and evaluated, and so that the man's activities in it are planned so as to extract from the territory the maximum possible profitable business.

Once these steps have been taken, it becomes relatively simple to account for the other "conditioning factors" which determine whether or not a man is performing inadequately, satisfactorily, or outstandingly well.

Job Analysis Rating. Also shown is a typical outline of a salesman's job, synthesizing the elements of sales duties from those performed by field representatives for both manufacturers and wholesalers in various industries. From one company to another within an industry the exact details may differ with different policies and different working conditions, but the basic factors remain much the same.

CAN YOU ANSWER THIS QUIZ? . . .

WHOM YOU SELL

1. Do you know how many active and inactive customers there are in each territory?
2. Do you have a complete detailed, factual description of the salient points about every customer in each territory?
3. Do you have an easy reference record of the salient facts of each salesman's experience with each customer?
4. Do you have a workable, useable outline of each salesman's daily *thinking* about operating his selling job?

WHAT YOU SELL:

5. Can you tell what each salesman sold each customer last month, and what he will sell each customer next month?
6. Can you tell what each customer has NOT bought for the past 60 days which he should be buying?
7. If a customer is not buying what might logically be expected of him, do you know what is being done about it?
8. Are you set up to handle efficiently whatever new business as well as old business a salesman brings in?

WHEN YOU SELL:

9. Can you tell exactly how often each salesman calls on each customer?
10. Can you see from route maps or other records and work plans what customers your men are calling on each day without adding to paper work for your salesmen?

WHERE YOU SELL:

11. Can you tell exactly where each salesman will be for at least the next month?
12. Can you see graphically where each customer is located in a salesman's territory with relationship to other profitable accounts?

HOW YOUR SELLING TIME IS SPENT:

13. Can you tell just how many men in a given company your salesman must see in order to make a sale?
14. Can you tell how many calls it takes a sale?
15. Can you tell how many hours a day or week each salesman is spending face-to-face with buyers, *selling?*

(*Continued on page 6*)

NFA CONVENTION PLANS COMPLETED

THEY KNOW WE'RE COMING SO THEY'LL BAKE A CAKE!

A huge centennial cake will be lighted at the NFA banquet on Tuesday evening, June 13, and then will be cut so that each lady may have a piece. Not only will the cake be good to eat but ladies who are lucky will find trinkets inside. Each trinket will have significance, for it will entitle the holder to one of the attractive door prizes.

The program to be held at White Sulphur Springs, W. Va., June 12–14, is being rounded out down to the smallest detail.

As the time gets nearer interest is mounting over the special Centennial Convention of The National Fertilizer Association.

Just to whet the ole' curiosity the last "Fertilizer News" carried a teaser item promising a special surprise entertainment following the NFA centennial banquet.

Could it be Harry playing the piano and Margaret making with the high notes?

It looks like "high jinks" at The National Fertilizer Association Convention this year.

Some splendid exhibits, illustrating the "Century of Progress" theme, will be displayed. Members and contributors were invited to participate and those organizations which have accepted include the following: Spencer Chemical Company, Kansas City, Missouri; Tennessee Corporation, New York City; American Cyanamid Company, New York City; International Minerals & Chemical Corporation, Chicago; Lion Oil Company, El Dorado, Arkansas; Du Pont de Nemours & Company, Inc., Wilmington, Delaware; Synthetic Nitrogen Products Corporation, New York City; Allied Chemical & Dye Corporation, The Barrett Division, New York City; Union Bag & Paper Corporation, New York City; and Fulton Bag & Cotton Mill Company, Atlanta, Georgia.

Speakers

The speakers will be leaders in our agricultural business, and governmental life. They include: Paul D. Sanders, editor, SOUTHERN PLANTER; Robert M. Salter, chief, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of agriculture; and Ralph Robey, chief economist, National Association of Manufacturers.

Use this list as a starting point in making your own list of duties and functions of your field salesmen, fitting the factors to your own circumstances. Set down clearly in writing the exact duties and functions of your sales personnel in each instance. Then rate your men on their performance of each item listed.

One way to approach this operation is to ask each of your men to make a list of all of the things they consider difficult, things which are giving them trouble, and to explain just how they handle each type of situation or problem.

The composite list of "difficulties' obtained from all of your salemen will indicate pretty well the complete list of duties they perform or should perform.

Using either or both of these methods of evaluating your salesmen's performance will revitalize your sales effectiveness and enable your organization to secure its share of business in today's competitive market.

A SALES JOB . . .

I. MAKING THE SALE

1. Gets acquainted with the prospect and gathers information concerning prospect's needs and problems
2. Plans the sales interview
3. Analyzes the prospect's specific needs
4. Demonstrates the value of the product
5. Presents facts and reasons; answers objections
6. Appeals to pertinent buying motives
7. Fights off competition
8. Creates goodwill towards himself and company
9. Helps other salesmen

II. ROUTINE DUTIES

1. Follows instructions
2. Makes reports
3. Makes records
4. Takes proper care of his equipment
5. Keeps informed on changes in price, policy, etc.

III. SERVICE

1. Trains other salesmen
2. Educates customers
3. Educates dealers and retail outlets

IV. EXECUTIVE DUTIES

1. Plans his day's work
2. Keeps planning ahead, week by week or longer
3. Supervises assistant salesmen, new salesmen
4. Develops himself by keeping his health, educating himself, developing helpful associates, etc.
5. Keeps in constant awareness of facts, business conditions and other developments in his territory that have a bearing on sales
6. Gathers local sales arguments
7. Works out new ideas and makes suggestions to superiors

V. CREATING GOODWILL

1. Renders customers "goodwill" services not directly related to sale of his products
2. Adjusts complaints and grievances
3. Participates in social affairs of his community and territory
4. Boosts his company at every opportunity
5. Capitalizes on his company's advertising

Editor's Note: Recently AMERICAN FERTILIZER began to publish stories about the sales problems of managers and owners under the heading "*The Salesman's Notebook.*" The response has been excellent, and future issues will carry more material of interest, and help to those who head the sales organizations—as well as the hard-working salesmen. If you have material for "*The Salesman's Notebook*" mail it today.

REPORT ON

MINOR ELEMENTS

This is a continuation of Vincent Sauchelli's Fine Article in the April 29 issue . . . .

WITH CONTINUOUS cropping of land it becomes increasingly apparent that it is necessary to replenish all the essential nutrients. Every crop removes a substantial amount of nutrients from the soil. New England crops, according to A. L. Mehring, in 1947, for example, removed from 3.6 million acres, an average of 29 lb. of nitrogen, 13 lb. of P_2O_5, and 43 lb. of K_2O per acre. We have no estimates of the per-acre removal of the trace elements or of the calcium, magnesium, and sulphur. Apparently for New England replacement of major nutrients, at least, by means of fertilizers and manures more than balances the removal by harvested crops. But the same favorable situation does not exist in all regions.

Major Group

Most fertilizer applications aim at supplying the elements needed in relatively largest amounts, that is, the so-called major group, N, P, K, Ca, Mg, and S. But it seems a fair statement to say that the minor element group is not replenished in the same manner, but rather in a haphazard fashion, chiefly through impurities carried by raw fertilizer materials, and through manures, and so on. In other words, the fertilizers generally applied do not also aim at replenishing the losses or removals of minor elements. I say "generally" because there are exceptional cases. The diagnostic techniques as developed in recent years have made all of us more or less aware of trace-element depletion by means of certain definite plant deficiency symptoms. Hunger signs, we call them; and how beautifully they are shown in the new edition of "Hunger Signs in Crops."

Why, then, has the fertilizer industry not prepared its fertilizer mixtures so as to do for the minor elements what it has done so well for the major elements?

It is clear from the work of many soil scientists and agronomists that for some crops, at least in some areas, fertilizers should provide the major and some, if not all, of the minor elements. Yet, the requirements are so complex, that the agricultural research authorities hesitate to generalize on recommendations. In one area may appear a genuine shortage of a certain nutrient; in other areas the trouble is not so much a shortage as it is fixation in the soil, that is, too much lime. The pH of the soil may induce or correct a shortage—acidity releases molybdenum; over-dosage of lime fixes manganese, copper; over-dosage of potash may depress manganese, but will release iron; an excess of sodium may depress calcium; and an excess of phosphorus depresses zinc. And so on. One area contains an element in such amounts as to prove harmful to plant growth; whereas, an adjacent area does not have sufficient to meet plant's requirements. The margin of safety in the case of some elements, say boron, is rather narrow: 2½ pounds per acre was safe for tobacco in Virginia; 3 pounds produced injury.

This article by Mr. Sauchelli has created considerable interest, and the mail is beginning to come in with other comments on this subject. What do you have to say about the questions raised here?

Therefore, is it practicable to add microelements to all fertilizer mixtures indiscriminately? The answer is obvious. In most areas the problem will have to be handled on a careful, prescription basis, as is being done more or less at the present time.

Methods of Supplying

Well, then, when minor elements are prescribed by local authorities, how does industry supply them? By one of several methods. For example, New Jersey recommends the inclusion of 5 to 10 pounds of borax in each ton of fertilizer sold in the state, and also 20 to 30 pounds of borax per acre per year for alfalfa. No particular problem is presented here. The borax is added at bagging time. If the goods have been cured to grade, the additional microelement carrier may mean a long ton, requiring special tagging and extra weighing at bagging.

Extra Work

The Production Department does not like this extra work, particularly if it comes at the peak of the shipping season. Otherwise there is no particular problem, except perhaps the State Chemist, who may require an exact, net weight and not the long ton basis, even though the bags are specially tagged to meet this situation.

The second procedure, when merely prophylactic amounts are required and no special recommendation is to be followed, is to prepare a mixture—a so-called "shot-gun" mix—and add it to regular grades at mixing time. Many companies include some such general mixture, comprising four or five carriers, in all or nearly all of their standard

(*Continued on page 24*)

WORLD RESOURCES

This is the second article in this series . . . from a paper presented before the UN.

BY
K. D. JACOB

of the Bureau of Plant Industry

(*Continued from page 28, of April 29 issue*)

Phosphorus

The phosphorus content of sea water is so low, probably averaging less than 100 milligrams of phosphoric oxide (P_2O_5) per cubic metre, that expectation of its direct recovery for fertilizer use is hardly justified. The ocean constitutes, nevertheless, a most important renewable reservoir of this element, from which many of the world's largest phosphate deposits were formed by direct precipitation or through the mediums of bird guano and phosphorus-accumulating marine life. Formation of phosphate deposits in such ways is a continuing but exceedingly slow process.

In the increasing order of importance the principal sources of phosphorus for fertilizer, all in the lithosphere, are bone, iron ore, and deposits of mineral phosphates (phosphate rock or phosphorite, and apatite). Although bone is no longer a world major source of fertilizer phosphorus it is still an important fertilizer in many countries that lack deposits of mineral phosphates or do not have well-developed chemical industries.

Phosphatic slags, obtained as by-products of the manufacture of steel from high-phosphorus iron ore, supply large quantities of fertilizer phosphorus in some parts of the world, notably Europe. Production of such slag is, however, inseparably geared to the steel industry, and there are no large areas where the output is sufficient to meet fully and economically the phosphate fertilizer requirements thereof. Although information is lacking on the total reserve of phosphorus in iron ore, the quantity is certainly very large.

Mineral calcium phosphate is by far the most important source of fertilizer phosphorus. Also, there are large occurrences of iron and especially aluminum phosphates which are not easily convertible into fertilizer. The economy of utilizing a particular deposit depends, among other things, on its size, geology, and accessibility to markets and on the chemical and physical characteristics and susceptibility of the ore to beneficiation and processing. Although much raw mineral phosphate is used directly as fertilizer in some countries, notably France, Great Britain, Soviet Union and United States, the greater portion is converted by chemical means into forms that are more readily available to plants.

[1] This paper was presented at the United Nations Scientific Conference on the Conservation and Utilization of Resources held at Lake Success, New York, August 17 to September 6, 1949.

World Phosphate

The known world reserve of phosphate rock and apatite is conservatively estimated at approximately 26,191 million tons, probably containing some 6,400 million tons of phosphoric oxide, distributed as follows:

	1,000,000 Tons
United States	13,504
Union of Soviet Socialist Repub.	7,568
Tunisia	1,300
Algeria	1,016
French Morocco	1,000
Brazil	572
Is. of the Pacific & Indian Ocean	182
Egypt	179
23 countries	670
	26,191

The estimates do not include additional large quantities of phosphate known to occur in many of these countries but for which reasonably accurate data are not available to the writer. For example, the deposits in western United States alone may contain more than 19,000 million tons of potentially usable material, and the total possible reserve of phosphate in North Africa and Egypt has been estimated as high as 451,000 million tons of material containing some 61,000 million tons of phosphoric oxide.

Other Deposits

Other countries known to contain phosphate deposits— in some cases quite extensive—for which quantity estimates are incomplete or unavailable, include Chile, China, Eire, French West Africa, Indo-China, Korea, Nigeria, Rhodesia, Sweden, Uganda, Union of South Africa, and Venezuela. Relatively little search has been made for phosphate in large areas of the world, notably South America, Asia except parts of the Soviet Union, and Africa other than the coastal areas of North Africa and Egypt. Furthermore,

(*Continued on page 26*)

National Agricultural Chemical Association MEETING

ATLANTIC CITY

APPROXIMATELY 200 industry leaders attended the recent annual meeting of the National Agricultural Chemicals Association at Atlantic City. A review of the current Residue Tolerance Hearings and discussions of current labeling and legislative situations were features of the meetings.

Considerable emphasis was placed on the fact that Federal and state agricultural leaders have made invaluable contributions to the Hearings by presentation of several thousands of pages of testimony and data substantiating the necessity for using agricultural chemicals to produce fresh fruits and vegetables. Speakers stressed that the responsibility for further documentation now rests with industry and with each company to make certain that its products are completely covered.

Opening Address

In the opening address, Ernest Hart, President of NAC said that industry's opportunities to serve agriculture were expanding rapidly and that while the industry is highly competitive, there is much that can be accomplished by the continuance of such programs as early buying and safe use of control materials.

Although most materials are in good supply, Mr. Hart declared there will be some spot shortages resulting from heavy demand and certain production difficulties. He did not see any acute shortage, however, during the using season, and stated that industry had the plant capacity to handle any reasonable demands. The experience of late buyers this year will be added encouragement to buy early next year, he said.

Lea S. Hitchner, Executive Secretary of NAC, called upon members to continue to work in the field of educational programs designed to develop a greater understanding of industry's operations.

In the panel discussion devoted to Residue Tolerance Hearings, Howard J. Grady, Moderator, reviewed the Association's activity in this field including the formulation policy and cooperative work with Federal and state agencies, who have been represented by witnesses during the Hearing sessions. "If each member company were obliged to act independently, the cost in time and money to individual members would be disastrous," he said. Panel participants included: Dr. C. C. Alexander, Mr. Harris Green (speaking for F. J. Rarig), and John D. Connor, Special Counsel for NAC.

Dr. Alexander said that at least fifty fruit and fifty vegetable crops have been discussed with more testimony devoted to apples than any other single commodity, and that all major crops have been covered. However, he said, due to the wide variety of insect problems and climatic conditions, the insect control picture on vegetable crops is different in each area and generally residue data on vegetables are not as complete as on most fruit crops.

Recommendations

For obvious reasons, NAC cannot contribute to the building of individual company cases as it has worked for the presentation of evidence in the broad field of insect and disease control, observed Mr. Green. He then made recommendations for individual members as follows:

1. Review the record on necessity for use and see that it is complete for each product. 2. Do everything possible to see that accurate data are ready for presentation on the nature and quantity of residues remaining after recommended usage. 3. Include the data you have, to show to what extent the public is exposed to your materials or related materials from sources other than fresh fruits and vegetables, and see that such data are in the record. 4. It can be expected that very few products can be cleared by the Food and Drug Administration as non-deleterious and non-toxic so that the individual companies must see that complete evidence on these issues is presented with respect to each material. 5. It is not too early to study the tolerances which you believe should be recommended. 6. Begin work on the first draft of your brief in support of the proposition that no tolerances are required. This brief will be drawn from the facts in the record, including the printed transcript and the exhibits.

Burden Is Heavy

Mr. John D. Connor, NAC Special Counsel, emphasized the importance of individual company briefs. He pointed out that the burden placed upon the chemical industry is admittedly heavy but that at the same time the responsibility to the public is equally important.

The briefs should include requested findings of fact, conclusions of law, regulations and the arguments in support thereof, Mr. Connor said: "I urge upon you both the importance and the necessity of these briefs. There will probably be buried throughout the record testimony relating to your product. This testimony may be subject to widely divergent interpretations. It will be up to you, not only to point out the testimony upon which you

(*Continued on page 22*)

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Front cover illustration shows the "gas reform" building of the Lion Oil Company plant at El Dorado, Arkansas, where the initial steps in the manufacture of anhydrous ammonia take place

THE FUTURE . . .

In meeting and chatting with the folks in the fertilizer business we have always been impressed with the fact that the executives seem to know and understand most of the problems of the industry.

The two big conventions in June and July will illustrate again the freedom with which big employers and the managers of big plants, medium-sized plants, little plants and allied members of the field get together and compare notes.

This is the frankness that is typically American.

Despite the swank surroundings of the two national meetings this summer, both NFA and APFC will offer the persons attending a real opportunity to exchange experiences, and profit by each other's knowledge and mistakes.

Sometimes the frankness of discussion is razor-sharp, and yet most of the members of the two groups show a fine spirit of willingness to accept criticism.

In many of the other huge, sprawling industries of the land there seems to be a tendency for the top executives to deliberately separate themselves from advisers and advice just because these "big shots" believe they are omniscient.

The future of fertilizer depends on frankness—not secrecy; on teamwork—not schemework; on trained assistants with facts—not strained insistence on rights and on assistants who *know*—not assistants who *yes*.

At the two conventions you older leaders, who have the experience, must make sure, that the new men in the field find out what is going on.

Just because you know and understand is no assurance that the next man in line in your company knows and comprehends the company policy and plan for the future.

He may be a rubber stamp. A rubber stamp can *not* do a job without help from the "impression" pad.

Did you ever stop to think about what kind of "impression" you are giving to your assistants?

The future is in their hands—not yours.

THE PASTURE MAN

Is American Plant Food Council Speaker

W. R. Thompson, Extension Pasture Specialist at Mississippi State College will speak at the APFC 1950 Convention at The Homestead, Hot Springs, Virginia, on Friday June 30.

A native of Mississippi, W. R. Thompson grew up on a cotton farm where he remained until he "found out it is easier to grow grass than to grow cotton."

W. R. Thompson

He attended the University of Mississippi, Delta State Teachers College and received his B.S. and M.S. Degrees from Mississippi State College. Following graduation, he taught school for six years, worked for the Triple-A for two years and was an assistant county agent for seven years following which he attended the University of Missouri.

The Mississippi pasture expert assisted in having 1950 officially proclaimed as pasture year in Mississippi, he is author of "The Pasture Book" and is known as "The Pasture Man."

The Mississippi Farm Bureau Federation last year bestowed upon Mr. Thompson the honor of being "Man of the Year in 1949." Since 1945 he has been Extension Pasture Specialist in Mississippi where he has established himself as one of the country's most effective exponents of grassland farming.

L. W. HUBER RETIRES

The many friends of Lester W. Huber throughout the fertilizer industry will regret to learn that illness has made it necessary for him to close the offices of L. W. Huber Company, 170 Broadway, New York City, and retire from all business activities. Mr. Huber, who has been in ill health for quite some time, hopes that such action will aid in his recovery and enable him at a later date to resume his business in the brokerage of fertilizer materials, chemicals, oils, etc.

He has been connected with the fertilizer industry since 1914. After serving as secretary of C. B. Peters Company of New York, Mr. Huber organized his own company in March, 1926. A regular attendant at the meetings of the National Fertilizer Association, Mr. Huber has made many friends throughout the industry, who join in wishing him a speedy return to good health. He can be addressed at 429 Fairway Road, Ridgewood, New Jersey.

STONELEIGH APPOINTED BY MATHIESON CHEMICAL

Mathieson Chemical Corporation recently announced the appointment of D. R. Stoneleigh as manager of the agricultural specialties division, newly formed section of agricultural chemicals sales. Mr. Stoneleigh was formerly agricultural chemicals sales manager for the U. S. Rubber Company.

He is a 1925 graduate of Yale University's Sheffield Scientific School, with a Bachelor of Science Degree in industrial chemistry. A native Baltimorean, he will make his headquarters in the Mathieson Building, Baltimore 3, Maryland.

QUAKER OATS MOVES OFFICE

The Quaker Oats Company recently announced the removal of its Chicago general office to The Merchandise Mart effective May 1. The company's new address is Merchandise Mart Plaza Chicago 54, Illinois.

TOTMAN ENTERTAINS ENGLISH REPRESENTATIVE

J. E. Totman, President of Summers Fertilizer Company, gave an informal cocktail party recently at the Hotel Biltmore, New York City, for A. F. C. Van Den Bergh, Director General of the Diamond Fertilizer & Chemical Company of London, England. Guests were a representative group from the fertilizer raw material suppliers, brokers and manufacturers in the area of which about fifty attended. Mrs. Totman and daughter-in-law, Mrs. James C. Totman of Bangor, Maine, were hostesses.

Mr. Van Den Bergh was enroute home to London following an extensive business trip which included the West Coast, Hawaiian Islands and New Zealand. His company deals extensively in the export of Superphosphates and Basic Slag from the Continent and Ground Phosphate Rock from North Africa.

NEW ENGLAND PASTURE TOUR SCHEDULED FOR JULY

A pasture tour, to be conducted cooperatively by NFA's Plant Food Research Committee and the agricultural colleges in New England, will be held July 9–14. AMERICAN FERTILIZER will be on hand with typewriter and camera to record the news of the journey. All six states will be visited. This event will give many interested persons an opportunity to observe at first hand a cross section of the New England grassland program which has gained national attention. A copy of the itinerary and other information can be obtained by writing the National Fertilizer Association.

The Green Pastures Committee consists of H. G. Allbritten, R. I.; J. S. Owens, Conn.; R. W. Donaldson, Mass.; L. H. Smith, Vt.; R. B. Littlefield, N. H.; and R. F. Talbot, Me. The Industry Committee consists of S. D. Gray, American Potash Institute, chairman, and R. H. Engle, NFA.

Those expecting to attend are requested to notify NFA as soon as possible.

SANDERS ADVANCES IN COMMERCIAL SOLVENTS

Howard L. Sanders, treasurer of Commercial Solvents Corporation, was recently appointed Vice President at a meeting of the Board of Directors it was announced by Major Theodore P. Walker, Chairman of the Board.

Howard L. Sanders

Mr. Sanders became associated with Commercial Solvents in 1933 when the Company acquired Rossville Commercial Alcohol Corporation, of which he was assistant treasurer. He has been treasurer since 1939, and is also Secretary of the Pension Committee which supervises the company's insurance and annuity plans, inaugurated in 1940.

Mr. Sanders is on the Advisory Board of the Chemical Bank and Trust Company.

MENTE HOSTS PARTY AT ALA-FLA-GA MEET

Mente & Co., Inc., New Orleans bag manufacturers, will sponsor an Open House Cocktail Party in connection with the Joint Annual Convention of the Georgia Cottonseed Crushers Association and the Alabama-Florida Cottonseed Products Association to be held in Savannah, Georgia, June 3–6, 1950. The party will take place in the Sunrise Lounge of the General Oglethorpe Hotel at 6:30 p.m., on Monday, June 5, just preceding the Annual Banquet. Host of the party will be O. F. Littlefield, Vice-president and Manager, assisted by the staff of the Savannah branch of Mente & Co., Inc.

DUES APPOINTED NEW ASSISTANT BY FEDERAL

Theo. M. Dues has been appointed assistant general sales manager of Federal Chemical Company, Louisville, Ky.

Mr. Dues joined Federal in 1932 and has had a wide experience in all departments, including seven years in production.

In addition to his new duties of assisting in the formation and direction of general sales policies and programs, he will continue to direct the company's advertising.

Obituary

OSCAR F. SMITH

Oscar F. Smith, a founder and president of the Smith-Douglas Company, Norfolk, Virginia since the organization of the company in 1921, died suddenly of heart attack in Greensboro, N. C., May 4.

Mr. Smith, one of the outstanding leaders of the industry for the past thirty years, was always active in local and national affairs concerning the fertilizer business. He was one of the original incorporators of the American Plant Food Council, and in earlier years had served as director of the National Fertilizer Association.

His death resulted from a heart attack while he was participating in a horse show at Greensboro. AMERICAN FERTILIZER joins with all members of our industry in an expression of sympathy to all concerned.

BEN E. MEGUSCHAR

Ben E. Meguschar, assistant to the vice president of the Plant Food Division of International Minerals & Chemical Corporation, died in Evanston, Ill., Friday, April 7.

Mr. Meguschar joined International in 1917 as a salesman in the Cincinnati district and progressed through the positions of district manager at Cincinnati and northern general sales manager at Chicago before becoming assistant to the vice president. He had been active at all conventions and meetings and was for years on the Middle West Soil Improvement Committee. His many friends in the industry join in expressing sympathy to his family.

BONE MEAL TANKAGE BLOOD

SHEEP—COW—POULTRY MANURE

CASTOR POMACE NITROGENOUS

GROUND TOBACCO STEMS HOOF MEAL

ALL FERTILIZER MATERIALS

FRANK R. JACKLE

405 Lexington Avenue New York 17, N. Y.

FERTILIZER MATERIALS MARKET

NEW YORK

Lower Prices on Sulphate of Ammonia Expected for Coming Season. Potash Supply Situation Eases with Arrival of Foreign Shipments. Vegetable Meals Increase in Price but Demand for Fish Meal Slackens.

NEW YORK, May 10, 1950

Sulphate of Ammonia

New prices for the coming season are expected at almost any time and most people think the new prices will be lower than the present schedule. Some have gone so far as to predict a decline of about $10.00 per ton. Stocks are ample at most points and there will probably be a carryover in the hands of the producers, although some further export business has been reported.

Nitrate of Soda

With the approach of the top dressing season, a better movement of this material is expected. No change in price was noted.

Ammonia Nitrate

A good demand still exists for this material and producers continue to ship against existing contracts as fast as production will permit.

Nitrogenous Tankage

A rather tight situation still exists in this material for nearby shipment, with most producers still sold up for several months. No price changes are noted.

Castor Pomace

While the price of $30.50 per ton is still being maintained, with the fertilizer season about over, some people in the trade thought the price might work lower. A lot depends on the production which has not been heavy recently.

Organics

Because of recent heavy advances in the prices of soybeans, soybean meal advanced sharply and carried most other vegetable meals along with it. Material sold for quick shipment at $71.00 per ton, f.o.b. Decatur, Ill. in bulk for 44 per cent protein material and the supply was limited. Linseed meal sold in bulk at Eastern points at $68.50 per ton. Cottonseed meal, 41 per cent protein, sold at $72.00 per ton, f.o.b. Southeastern points. Tankage sold at $7.25 per unit of ammonia ($8.82 per unit N), and some sellers were asking $7.50 per unit ($9.12 per unit N). Blood was still slow and neither the feed or fertilizer trade showed much interest.

Fish Meal

While other feed materials picked up, fish meal lagged behind. Due to the increased stocks of imported material at various ports, supplies were ample to fill buyer's needs. No further trading was reported in menhaden meal on a "when and if made basis" as most buyers hesitated to buy for summer shipment, feeling the price would work lower as the season progressed.

Bone Meal

There has been a recent increase in the demand for this material from the fertilizer trade, which is entirely seasonal. The demand for feeding bone meal has been rather poor and imported bone meal still continues to flow into the country.

Superphosphate

Withdrawals from producers' stocks have been disappointing in some sections while other sections report a normal movement for this time of year. Supplies are ample at most points.

Potash

With heavy arrivals recently at various Atlantic ports from abroad, this market has eased up considerably and most buyers are now well supplied, particularly as the end of the fertilizer season is approaching. Whether there will be continued arrivals of imported material during the coming fertilizer season remains to be seen. It will depend mainly on price.

PHILADELPHIA

Market Quiet. Some Materials Still Scarce. New Potash Prices Higher but with Increased Discount.,

PHILADELPHIA, May 10, 1950

The raw material market is quite inactive and while there is demand for castor pomace and while triple superphosphate continues in rather tight supply, blood, tankage, bone meal and fish meal are weaker. It is reported pretty certain that the mixed fertilizer consumption this season will be ten per cent or more under last year.

Sulphate of Ammonia—Movement is principally against contracts and there is no shortage of material. While a price reduction is expected to be announced later in the month, it is now thought this will not be so much as had been hoped.

Nitrate of Soda—Normal seasonal demand continues, and supplies are ample to meet all requirements.

Blood, Tankage, Bone—These organics continue in a weak market position and limited demand. Blood is quoted at $6.00 to $6.50 per unit of ammonia ($7.29 to $7.90 per unit N), with tankage at $7.00 to $7.50 ($8.51 to $9.12 per unit N). Bone quotations are nominal and stocks are ample.

Castor Pomace—Production continues under contract with no surplus offering for sale.

Fish Scrap—Market is very quiet, with new catch scrap quoted at $130.00 per ton, when-and-if caught. Menhaden meal is quoted nominally at $140.00. Considerable imported materi l is offered, and

some of this is reported in storage in this country.

Phosphate Rock—Movement is up to normal and demand is not pressing, as the active season is about over. Stocks are said to be ample to meet all present needs.

Superphosphate—The supply position of triple grade continues rather tight, but the supply of normal is satisfactory and no shortage is now evident.

Potash—While new prices have been announced and appear to be higher—muriate, 40 cents per unit against 37½ cents last year, and manure salts 21 cents against 20 cents last year, it is figured that the net cost will be about same as heretofore after taking into consideration the discount for deliveries taken monthly over the twelve month period. There is no "spot" period this year.

CHICAGO

Some Advances in Organic Materials and Continued Demand Expected

CHICAGO, May 8, 1950

A slightly better tone is evident in the animal ammoniates market in the Middlewest. Trading is more or less confined to current production and steady prices are easily obtainable. In view of this situation, some producers have advanced their prices $2.50 to $5.00 per ton on finished product and present indications are that the demand will continue at the higher levels.

Meat scraps, ground and sacked, 50 per cent protein, are firm at $105.00 to $110.00 per ton, f.o.b. shipping points. Digester tankage, 60 per cent protein, $100.00 to $105.00 per ton. Dry rendered tankage ranges from $1.90 to $2.00 per unit of protein, according to location and quality.

Wet rendered tankage is generally held at $8.55 per unit of ammonia ($10.39 per unit N) for high testing material and low test product at $9.00 to $9.25 per unit ($10.94 to $11.24 per unit N). Generally speaking, buyers' views are 25 cents to 50 cents lower, but asking prices are firmly held. Dried blood sold at $6.25 per unit of ammonia ($7.59 per unit N) delivered. Steamed bone meal in bags 65 per cent B.P.L., is unchanged at $70.00 to $75.00 per ton and raw bone meal, 4½ 45 per cent, at $65.00 per ton.

CHARLESTON

End of Mixing Season Approaching. Most Materials in Adequate Supply. New Potash Prices Announced

CHARLESTON, May 8, 1950

The shipping season for fertilizers in the South is very nearly over and the season in the Midwest and West is rapidly tapering off. Superphosphate in certain isolated areas is short of demand, but supplies are available from several Southern points. Organic and mineral nitrogen is generally adequate for this season's use. New prices for potash for the coming season have been announced and contracts are being taken by domestic producers.

Organics—Organics for prompt shipment are in quiet demand. Domestic nitrogenous tankage, summer and fall shipment, has been sold at prices ranging from $3.75 to $4.10 per unit of ammonia ($4.56 to $4.98 per unit N), in bulk f.o.b. production point, depending on its location. Blood and tankage are quiet with demand slack from both fertilizer and feed users. Offerings of imported nitrogenous are light and in small quantities at a time.

Castor Pomace—Sales have been recently made for shipment during the late summer at $30.50 per ton in bags, f.o.b. Northeastern production points. Movement is primarily against existing contracts.

Dried Ground Blood — Chicago market is quiet at around $6.00 to $6.25 per unit of ammonia ($7.29 to $7.59 per unit N) in bulk. New York market is around $6.50 to $6.75 per unit of ammonia ($7.90 to $8.20 per unit N).

Potash — Movement continues steady against contracts and offerings are being made on a spot basis. Some domestic producers are offering contracts for the new season and it is reported the base price and discounts have been changed slightly. The new price for muriate of potash, for example, is 40 cents per unit in bulk, f.o.b. Carlsbad, with discounts of 10 per cent and 6 per cent.

Ground Cotton Bur Ash—Shipments continue steady against existing contracts for material testing 30 per cent to 40 per cent K_2O and 3 per cent to 4 per cent chlorine

JAITE

HEAVY DUTY MULTI-WALL PAPER BAGS

OFFER DEPENDABLE PROTECTION FOR

YOUR FERTILIZER

THE JAITE COMPANY

"Manufacturers of Paper and Paper Bags"

JAITE, OHIO

"IT'S IN THE J BAG"

SINCE 1905

DEPENDABLE
is the word that best describes
KRAFT made-to-order
heavy-duty multi-wall
shipping sacks
produced in our new plant at St. Marys, Georgia
DEPENDABLE bag paper . . . made to exacting specifications in our own mill
DEPENDABLE bag design . . . by our own practical packaging engineers
DEPENDABLE workmanship . . . by personnel with long experience in multi-wall bag construction
DEPENDABLE plate-making, and dependable printing with improved presses and inks
DEPENDABLE deliveries and service . . . by rail or water right from our own doorstep.
• Sewn or pasted—valve or open mouth—2 ply or up to 6 ply . . . you can depend on "Kraft" both as a source of supply and as a source of complete satisfaction.
KRAFT BAG CORPORATION
A DIVISION OF GILMAN PAPER CO.
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Gilman
PAPER CO.
• St. Marys Kraft Corp.
• Gummed Tape Div.
• The Cellucord Corp.
• Kraft Bag Corp.
The long, white building in the foreground is the newly completed addition to the Kraft Bag Corporation's plant in St. Marys, Georgia
Send your product to market in a "KRAFT BAG"—the container for a thousand uses!

Current price for ground material is around 65 cents per unit of K_2O, in bulk f.o.b. Texas production point.

Phosphate Rock—Producers are shipping from stocks above ground against a steady demand. Prices continue firm.

Superphosphate — Market position generally is firm, but as demand in certain points in the Midwest exceeds somewhat the supply, movement of a fair tonnage from Southern points to Midwestern points has been noted.

Sulphate of Ammonia—Demand continues seasonal with supplies of coke oven material sufficient to balance the demand. Producers of synthetic material generally are well sold through June.

Ammonium Nitrate—Movement continues steady against contracts and demand is slightly in excess of supply. Prices remain firm.

Nitrate of Soda—Prices continue steady and demand season with stocks sufficient to answer all calls.

It is not enough to state a need unless we point the answer.

MATHIESON OPENS THREE NEW INSECTICIDE PLANTS

Another large company has joined the crop protection chemicals group in America with the recent announcement that Mathieson Chemical Corporation has already started production of agricultural insecticides and fungicides at Little Rock, Arkansas, and Williamston, North Carolina, with another plant at Houston, Texas, scheduled to begin operations later in May.

The new units will be located in convenient proximity to Mathieson's fertilizer plants or distributing warehouses in those cities, and their readily accessible truck loading facilities will enable customers to pick up a combination load of fertilizers and insecticides at the same time. These three new plants will contribute to the much-needed supply of crop chemicals in 1950.

Manufactured in accord with the recommendations of agricultural colleges, experiment stations and extension services, strict laboratory controls will be maintained to assure that each product manufactured is in accord with Federal and State label requirements. The products will be marketed under the "Gro-More" and "White Diamond" brand names.

POTATOES REMOVE SOIL PLANT FOOD

From a recent article in the suffolk County, Maine, Farm Bureau News, we quote the following: "A 400-bu. potato crop (tubers only) removes from the soil on the average about 80 lbs. of nitrogen, 35 lbs. of phosporic acid, 100 lbs. of potash, and 15 lbs. of magnesium oxide. Two thousand five hundred lbs. of a 5-10-5 fertilizer per acre supply the following amounts of these plant foods: nitrogen 125 lbs., phosporic acid 250 lbs., and potash 125 lbs. If the 5-10-5 fertilizer contains two per cent of magnesium oxide, 2500 lbs. would supply 50 lbs. of MgO. Since nitrogen and magnesium are subject to leaching, it is generally advisable to supply a little more than the crop removes to allow for such loss. If the potato vines are burned or removed from the field, a 400-bu. crop would remove more than the above amounts of plant food."

For

"high-nitrogen"

fertilizer — use

Koppers Ammonium Sulphate!

Koppers offers a good commercial grade of ammonium sulphate—the element that is so essential to fertilizer because of its high nitrogen content.

KOPPERS

KOPPERS COMPANY, INC.
Tar Products Division
Pittsburgh 19, Pa.

Characteristics

Koppers Ammonium Sulphate comes in crystals with low free-acid and moisture content. The nitrogen content is guaranteed to be not less than 20.5%.

Shipment

Koppers Ammonium Sulphate is shipped in bulk in boxcars and trucks. It is also available in 100 lb. and 200 lb. bags. Shipments are made from: Kearny, N. J. . . . St. Paul, Minn. . . . Granite City, Ill. (St. Louis) . . . Midland, Pa.

another product of

A&S

research...

The EXPENDABLE PALLET

Loaded A&S pallets being placed in freight car.

Quick Facts About A&S Expendable Pallets...

1. Standard fork trucks may be used, making it unnecessary to change tubular forks.
2. You can unload car in fraction of regular time.
3. No upcharge to you for palletized shipment.
4. All bags laid flat—not folded.
5. Standard pallet size is 48" x 48", about 1500—2000 bags per pallet.
6. Cores alongside fork openings prevent blocking of fork entrance in shipment.
7. All-over wrapping gives bags greater protection.
8. Regular fork trucks can handle pallets, tunnels are 26" apart.
9. Strong car bracing prevents shifting of pallets in transit.

HERE's the most modern and up-to-date expendable pallet used by the multiwall bag industry. This expendable pallet was designed and developed by A&S, and patent applications have been filed to cover its unique features.

Packed under pressure, the compact, square bag unit is completely wrapped and then strapped to the A&S Expendable pallet. Already, A&S customers are reporting noticeable savings in their bag handling and storage costs. Follow these leaders and put to profitable use the "plus" packaging features being developed in the A&S Packaging Laboratories.

ARKELL & SMITHS · THE OLDEST NAME IN PAPER BAGS ·
90 YEARS OF KNOW HOW

ARKELL and SMITHS

CANAJOHARIE, N.Y. · WELLSBURG, W. VA. · MOBILE, ALA.

(Exclusive From our Washington Correspondent)

THE FTC REPORT on the Fertilizer Industry is now out in printed form. If you haven't read it it might be well to get a copy. Some commentaries will be found disturbing; others a challenge: for one, the question of "high costs of distribution" due allegedly to archaic methods of manufacturing and marketing fertilizers generally prevalent within the industry.

In spite of the unhappy experiences of last fall, it looks as though the 1949–50 season will wind up in not-too-bad a fashion. For the country as a whole total tonnage delivered may be some 10–12 per cent below last year's. Regionally here are some guesstimates: Northeast, about the same as 1948–49; South Atlantic, off about 8 per cent with Florida up about 15 per cent; North Central, off 10–15 per cent; Middle South, off slightly with Texas equal to last year; Pacific Coast, off 15–20 per cent.

Currently there is not enough ammonium nitrate for direct application to go around—a belt from the Great Lakes south being the worst sore spot. Other forms of nitrogenous material appear to be in adequate supply. From all reports the trade would be using considerably more concentrated superphosphate this spring if it could be had. Perhaps some additional capacity is needed—and soon.

In the international field, the recent award by Federal Supply Services to Austrian producers of nitrogenous fertilizers for Korea on a low bid of $163.76 per ton of nitrogen f.o.b. vessel Trieste may indicate that active world-wide competition has developed. This offer is equivalent to ammonium sulfate at $37.56 per ton and could have future significance—likewise the offers of domestic ammonium sulfate in the $38–$40 range f.o.b. vessel, which prices would reflect freight charges to port.

Consideration is being given to the advisability of underwriting the construction of a synthetic ammonia plant in South Korea. Federal Supply Services has recently requested chemical engineering firms to submit cost-plus-fixed-fee proposals for conducting preliminary surveys and investigations to provide the basis of a report on the kinds of nitrogenous fertilizers to be made, availability of raw materials and power and transportation, plant site or sites, and type of equipment and structure for such facility.

A team representing the French fixed nitrogen industry may pay a visit to this country under the auspices of ECA. The proposed visit would follow the general pattern of the tour made by the British fertilizer team last fall except that ammonia plants are expected to be the chief points of interest.

The 1949–50 report on plant-food consumption in the United States is expected to be released within the near future by the USDA people at Beltsville. The Food and Agriculture Organization of the United Nations is currently engaged in an international survey of production, supply and consumption of nitrogen, phosphates and potash for the fiscal year 1950–51. This information will be incorporated in a forthcoming bulletin published by FAO.

CORN CONTEST LEADERS APPOINTED IN NORTH CAROLINA

Governor W. Kerr Scott of North Carolina has announced that 29 civic, business and agricultural leaders have been asked to help wage the 1950 "corn war" with Virginia. The trophy, donated last year by The National Fertilizer Association for the winner of the contest, will continue to be emblematic of victory this year. Virginia won the 1949 trophy.

R. Flake Shaw, Greensboro, executive vice president of the North Carolina Farm Bureau, was appointed steering committee chairman, and Harry B. Caldwell, master of the North Carolina Grange, was asked to head the action committee.

R. B. LeRoy A. R. Ewing

BEMIS APPOINTS TWO NEW MEN IN LAB. AND SALES

Robert B. LeRoy, formerly head of the Paper Control Laboratory of Bemis Bro. Bag Co. in St. Louis, has been appointed sales manager of the Bemis multiwall paper bag plant in East Pepperell, Massachusetts.

Mr. LeRoy joined the Bemis Company in 1938 as a member of the New York Sugar Bag Sales Division, and in 1944 was transferred to East Pepperell to develop and direct the multiwall packaging research laboratories there.

New head of the Paper Control Laboratory is Arthur R. Ewing, formerly laboratory technician at the Bemis plant in Peoria and technical assistant. Mr. Ewing joined Bemis at Peoria in 1924 as pulp and paper laboratory technician and has served continuously at this plant until the present transfer. These changes are effective May 1st.

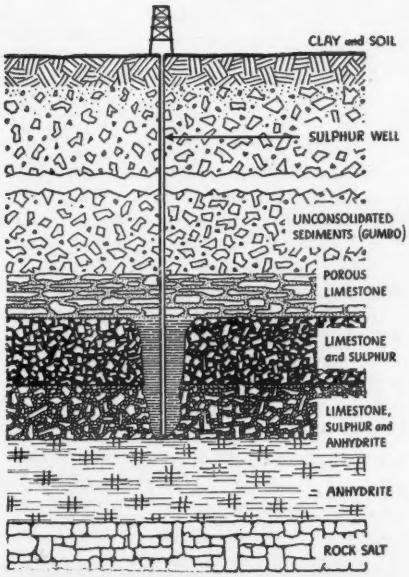
SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*DEPOSITS . . .

Practically all of the elemental sulphur used in this country comes from mines in Louisiana and Texas.

There, the sulphur deposits occur in the cap rock overlying certain salt domes. The sulphur is mined at depths of 300 to 2,000 feet below the surface. It is melted in place by pumping into the deposit water heated under pressure to a temperature above the melting point of sulphur. The melted sulphur flows away from the limestone and is pumped to the surface where it is allowed to solidify in vats. By such means sulphur nearly 100% pure is produced.



Loading operations at one of the huge vats of Sulphur at our Newgulf, Texas mine. Such mountains of Sulphur are constantly being built at our mines, from which shipments are continually made.

TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

CARLSBAD AREA VISITED BY OUTSTANDING GROUP

An outstanding group of American business men recently visited the Carlsbad potash area as guests of the directors and officers of International Minerals & Chemical Corporation.

Traveling on a special Santa Fe train with Louis Ware, president of International, and A. Norman Into, vice president in charge of the company's Potash Division, as hosts, the group included 24 bankers, lawyers and industrialists from Chicago and New York; seven of the nine directors of the company; and nine of the companys' principal officers.

The trip was an inspection tour of International's potash mining and refining operations. The group was joined at Carlsbad by a number of important business men and state and local officials from the Southwest.

Commenting on the trip, Louis Ware said,

"Nearly everywhere I go I meet people who ask me, 'What is potash, and how is it used?' I could think of no better way to help representatives of American business see the significance of the potash industry and acquaint them with the tremendous industrial possibilities of New Mexico than to invite them to join our directors and officers on an inspection trip of International's Carlsbad operations."

The party arrived on a special train over the Santa Fe Railway which carried, in addition to the International Minerals & Chemical Corporation group, members of the board of directors of the Santa Fe and a group of their guests. The combined parties inspected the Santa Fe's operations in Kansas and were guests of honor at a luncheon given by the Topeka Chamber of Commerce.

At Clovis, N. M., the train was divided, the section with the International group coming to Carlsbad and the Santa Fe section proceeding to California.

On arrival in Carlsbad the International group took busses to the company's mine. Following a trip through the mines, luncheon was served in the company dining room. After luncheon the visitors inspected the potash refinery, and the directors held a board meeting during the afternoon.

Saturday morning April 29, the group from Chicago and New York left by busses for a trip through the Carlsbad Caverns. They returned to the special train in time to leave for Chicago at 11:00 o'clock Saturday morning, arriving in Chicago Sunday afternoon.

POTASH DELIVERIES OFF DUE TO STRIKE

A total of 422,490 tons of potash containing an equivalent of 240,569 tons of K_2O was delivered during the first quarter of 1950 by the five major American producers, according to the American Potash Institute. This represents a decrease of 25% in salts and 18% in K_2O under the corresponding period in 1949, due to the strike at the mines in the Carlsbad, N. M., area during January. Deliveries for agricultural purposes in the United States, Canada, Cuba, Puerto Rico, and Hawaii consisted of 384,452 tons of potash salts equivalent to 217,102 tons of K_2O as compared to 272,713 tons of K_2O in the first three months of 1949. Muriate of potash predominated with 199,485 tons K_2O, whereas 16,915 tons were delivered as sulphate of potash and sulphate of potash magnesia, and 702 tons as manure salts. Deliveries for chemical purposes totaled 29,982 tons of salts equivalent to 18,632 tons K_2O, an increase of 8% over the corresponding period a year earlier. Exports to other than Institute countries amounted to 8,056 tons of salts containing 4,835 tons K_2O.

POTASH DELIVERIES
Short Tons
(United States, Canada, Cuba, Puerto Rico, Hawaii)

	Jan–March 1950	*Jan–March 1949*
Muriate	199,485	236,487
Manure Salts	702	18,443
Sulphate & Sul. Pot. Mag.	16,915	17,783
Total Agricultural	217,102	272,713
Chemical Potash	18,632	17,197
Export (Other Countries)	4,835	3,127
Grand Total	240,569	293,037

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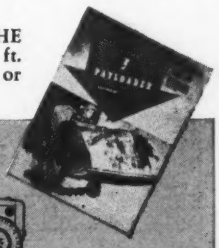

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NACA Meeting

(Continued from page 9)

rely, but also to develop the interpretation and significance which you believe should be attached to this evidence. The requested findings of fact and supporting arguments contained in this brief must be based only on evidence in the record, complete with citation to the page number in the transcript or to the exhibit number where that evidence is found. There may be no substitute for a complete knowledge of the evidence contained in the record in the preparation of a competent brief," Mr. Connor said.

"The daily summary of the testimony prepared by NAC furnishes you with a convenient starting place in the compilation of this material. No attempt is made in this summary to evaluate the evidence. Its sole purpose is to notify you when your product is mentioned in the oral testimony. From that point on, it must be the responsibility of the party interested in each chemical to go to the transcript and evaluate that testimony," he added.

Good Year Ahead

The prospect for a good year in the chemical industry and for agricultural chemicals was predicted by W. M. Dennis, Economist, American Cyanamid Company, in the luncheon address.

Mr. Dennis said that for the year 1950, business activity in general is likely to result in an average about equal to 1949 and perhaps slightly better. There are little signs of a distributing decline in prices in general, he said, in the near future. The reasons lie in federal price support of agricultural products and in labor monopolies, which are forcing labor costs steadily upward, offset, in part, by managerial improvements and capital investments in new, modernized equipment.

"Certainly, agricultural prices are tending downward," but, observed Mr. Dennis, "there is a possibility of a cyclic drought with heavy insect infestation occurring this summer in the Midwest and Southwest. The reports we have been hearing of dust storms and insect damage in the southwest may be a precursor of more to come, which would have an effect on agricultural prices in general and which would help to 'bail out' the government on farm subsidies."

A panel discussion on labeling brought forth the history and present day interpretation of the various laws applicable to the sale and usage of industry's products, along with the general observation that a further study of this area is required.

Participating in the discussions were Wilton McKinley Taylor, Moderator; C. S. Maddock; Richard Hansen; and G. P. Lamb, NAC Counsel.

The second morning was devoted to a forum on new legislation with W. W. Sunderland, Moderator; Dr. C. L. Smith; and J. A. Noone, NAC, participating. Forum participants reviewed both current and pending legislation and relating problems and pointed out their effect on industry's operations. Current negotiations with government agencies were also reviewed and the importance of this area of Association activities was stressed. Progress in the enactment of The Model Insecticide Bill was also reviewed.

A discussion of the Association's Information Committee followed with Wallace S. Moreland, NAC Information Advisor, serving as Moderator; Eugene E. Perrin; M. R. Budd; C. Harold Cunningham; and Don Lerch, NAC, participating.

Mr. Moreland reviewed the operations and progress of the Association's information program, which has been in operation for eight years, stating that industry had a continuing responsibility to keep those in agriculture and related fields informed of industry's progress and developments.

Mr. Budd commented upon his recent trip through the South, during which he said he found considerable evidence showing that the early buying program of NAC, in cooperation with other groups, has definitely been translated into action by growers.

Mr. Cunningham discussed industry's "Ten Point Program," designed to develop a wide understanding of the factors involved in the selection and usage of industry's products, emphasizing that the program has proved quite beneficial and that there is a need for continued activity in this field.

Circulation of just a few of industry's house organs reach well over the million mark monthly, according to Eugene E. Perrin, who recommended that additional study be made of the opportunities available to industry to use these magazines.

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(Continued on page 7)

grades. The amount is supposed to be such as to cause no harm and yet provide insurance against development of any severe depletion. Personally, I do not care for such "shot-gun" mixtures. I like the system inaugurated by Dr. C. A. Camp of the Florida Citrus Experiment Station at Lake Alfred. As a result of extensive field and laboratory research, the citrus grove manager now knows he needs a fertilizer supplying 3 to 4 per cent N, 6 per cent P_2O_5, 8 per cent K_2O, 2 to 3 per cent MgO, 1 per cent MnO, and ½ to 1 per cent CuO. The fertilizer analysis on the tag contains 6 figures, not merely 3, since the field research has shown that under their local conditions, N, P, K, Mg, Mn, and Cu are needed in the ratio specified for practically all conditions. The local fertilizer industry has been glad to work out procedures to furnish the citrus grower the required analysis. The usual guarantees are met. Everybody seems satisfied.

No Agreement

But no general agreement regarding the composition of either a shot-gun mixture or a grade containing a specific ratio of two or more microelements seems to be possible in other sections. I have time and again tried without success to get various Station workers to make specific recommendations other than the alfalfa grade, for the Company I represent.

My belief and hope is that eventually we shall follow the Florida system, according to which micronutrients will be supplied on the basis of research as is now the case with respect to the major elements—at least in certain areas and for certain crops. We know, for example, how the farmer has been educated in most sections of the Northeast to use 20 to 30 pounds of borax per acre on alfalfa, 10 pounds of borax per acre on cauliflower soils, and 1 to 2 pounds of MgO per acre on potatoes. Regular grades containing these amounts of borax are now offered by the industry. The sugar beet grower in New York, Michigan, and Ohio has been taught how to use about 500 pounds of common salt and 50 pounds of borax per acre in addition to the regular grade of fertilizer. It will take a lot of educational work to extend similar programs to other crops and other areas. When that time arrives, many new difficulties are bound to arise.

We shall need to study the chemical reactions which occur in the fertilizer mixture when soluble sources of microelements are included. Some advocates insist that the sources should be raw, unprocessed ores, or at any rate, should be relatively insoluble. Instead of borax, for example, they suggest we use borosilicate glass. Very good arguments have been advanced in favor of the less soluble sources of boron. Trustworthy methods of sampling, chemical analysis, physical testing, and laboratory determination of availability are indispensable to proper research work on new fertilizer materials and their mixtures. Until laboratory methods of analysis have been standardized for determining the content and the solubility of insoluble trace element carriers, the fertilizer industry will have to use known available soluble sources.

Question of

That brings up the question of guarantees. Since trace elements are also used for crop production purposes, we have to consider them in relation to fertilizer control. Most states are taking the stand—and correctly it seems to me—that if an element is claimed, it should be guaranteed. The grower should know how much of each element the fertilizer contains and the extent to which it is going to be available to the crop.

Well, if they are to be reported, what system is to be followed? In terms of the chemical element—B—or their oxides—CuO, MgO—as is customary with phosphorus or potassium? Opinions vary. Dr. Firman E. Bear several years ago discussed this phase before the National Association of Control Chemists and made it quite clear that the subject requires much careful study before it can be resolved.

The industry already has had many headaches with the inclusion of borax in some grades. Some states have required the registration of each borated fertilizer as a separate grade, even though what was involved was merely a different amount of the salt. Should, for example, an 0–12–12 with 80 pounds of borax per ton, and an 0–12–12 with 100 pounds of borax, be registered as two separate grades, or should they be regarded as one grade, borated? Fortunately, common sense is being applied by the Control Chemists. We are now getting somewhere on this matter. I cite this merely to show that we can get into snarls about these new developments. As Dr. Bear suggested, it may become necessary for the industry and agricultural authorities to cooperate in preparing a list of elements which can be guaranteed and at the same time decide on the least amount of each for which credit may be claimed. Micronutrients present in fertilizer materials as impurities and determinable only by spectroscopic analysis would be ruled out.

Conclusion

We are only at the beginning of this phase of fertilization. Considerable study will have to be devoted to it, both in the laboratory and in the field. Fertilizer industry looks to the Agricultural Experiment Stations for more information regarding local soil and crop requirements of minor elements. We shall continue to supply them in regular grades on a prescription basis. Our present knowledge of the chemical reactions of these elements, or the salts furnishing them, with the other salts in the formulation in the pile or bag is deficient. Perhaps we shall learn that some, at least, of these elements can be more efficiently applied in the form of sprays. Manganese and copper are now sprayed in the citrus groves of Florida and Louisiana.

Present day production of mixed fertilizers is becoming more and more a heavy chemical industry.

(Continued from page 26)

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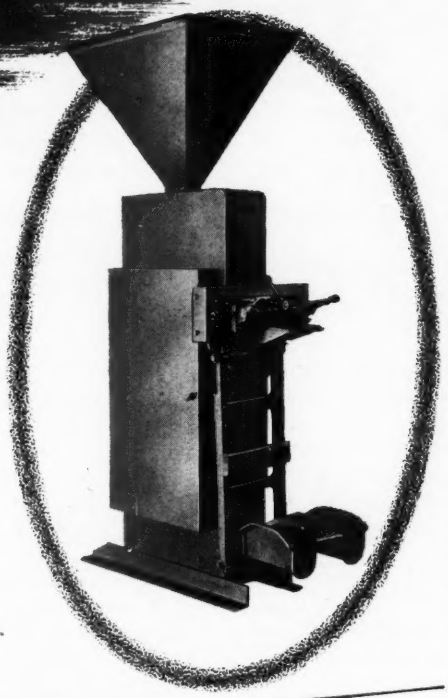

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World Resources

(*Continued from page 8*)

there is evidence of large submarine deposits of phosphate, for example, off the coast of southern California and on the Ranger Bank, Mexico.

The world production of raw phosphate in the year ended June 30, 1949, estimated at some 19,195,000 tons containing about 6,022,000 tons of phosphoric oxide, was sufficient to meet most demands and was approximately 60 per cent greater than the production in 1939. Further expansion of mining and concentrating facilities is in progress, and there is every indication that the supply will generally keep pace with the demand. The favorable position of the North African, and Pacific deposits with respect to size, mining costs, transport, and markets justifies the opinion that these areas will continue to furnish the major portion of the world's mineral phosphate needs for a considerable time.

The picture as to world capacity for chemically processing mineral phosphate into fertilizers is obscured by lack of information on some of the eastern European countries. While it appears, that the over-all capacity in western Europe, North America, and Australia is now at or above the current level of demand for soluble phosphates in these regions, there are local areas where the capacity is not sufficient. Although the Japanese capacity for making phosphate fertilizer has been largely rehabilitated, production is still at a low level because of shortage of sulphuric acid and other difficulties. Manufacturing facilities are quite limited in Africa and South America and are woefully deficient in vast areas of continental Asia. In general, there is need of considerably increased capacity for making highly concentrated phosphates, which can be shipped and handled more cheaply per unit of phosphorus than the customary low-analysis products.

Potassium

The ocean, constituting as it does a potential inexhaustible source of potassium, averages about 0.05 per cent of potash (K_2O) and contains some 6 times 10^{14} tons of this plant nutrient. Although oceanic potassium is currently utilized as fertilizer in only very limited quantity and usually at relatively high cost, there is good prospect of the eventual development of economic processes for its selective precipitation from sea water. One such process, not yet carried beyond the pilot-plant scale, makes use of a regenerable organic precipitant.

Notable quantities of potassium are recovered from lake brines and small amounts are produced from subterranean brines. Economic recovery of this potash often depends on the simultaneous production of other chemicals.

Among the potential but at present generally uneconomic sources of potassium— little used as yet— are the large and widely distributed deposits of potash-bearing rocks, such as alunite, leucite, feldspar, mica, glauconite, and some kinds of shales. Utilization of these rocks has the disadvantage that the potash content, which rarely exceeds 12 per cent, is seldom amenable to concentration by physical means. There is the further serious handicap that recovery of the potassium usually requires expensive chemical treatment and, with the exception of alunite, offers little opportunity for production of marketable co-products.

Little is known of the world resources of potassium in potash-bearing rocks, but the total reserve is certainly enormous. For example, the glauconitic sand, Georgia shale, and wyomingite (leucite-phlogopite-sanidine) deposits in the United States alone are estimated to contain some 778 million tons of potash. Other occurrences, some very large, include the leucite deposits of Italy and the alunite deposits of China, Korea, Transcarpathian Ukraine, and Australia.

Minor, though often locally important, commercial sources of fertilizer potassium include plant ash, fume and dust from cement kilns and blast furnaces, distillery waste from fermentation of sugarcane molasses, and Steffen's waste from the beet-sugar industry.

Subterranean deposits of water-soluble minerals have supplied the

(*Continued on page 32*)

Minor Elements

(*Continued from page 24*)

The raw materials of the trade are largely chemicals, and the chemical reactions involved are many, varied, and complex. The end results are often difficult to predict. Technical supervision and strict chemical control are necessary parts of the manufacturing process all the way from the selection of raw materials to the shipping out of finished mixtures. This fact is not always appreciated by the layman.

To bring the needed materials together in accordance with definite formulas, to produce mixtures with desirable agronomic, chemical, and physical properties is no simple task. Compatability of materials, maintenance of drillability, and guaranteed analysis are difficult but necessary objectives.

So I can sum it up like this: For greater efficiency we need an exhaustive investigation of the composition and properties of fertilizer materials and mixtures in relation to plant growth. Such studies are fundamental to the development of plant food carriers having higher efficiency and greater economy for the farmer.

The studies should lead to a higher efficiency provided they can solve the problems of the influence of method of formulation, treatment, and storage of complete mixtures including soluble minor element sources. Previous solutions of problems of segregation, moisture absorption, caking, dusting, drillability, and granulation, although substantial, do not necessarily apply to the newer chemical salts of higher analysis and their formulations. New problems require new approaches. The most troublesome problems are associated with the chemical and physical properties of alkalinity, solubility, hygroscopicity, moisture content, and particle size. The constantly increasing utilization of ammonia solutions, and hign-analysis ammonium salts and urea in formulations, has increased difficulties for the production department.

In these suggested investigations the cooperative effort of industry and state and federal agencies will be needed to expedite success.

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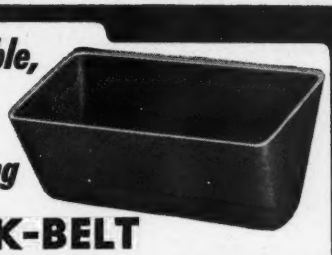

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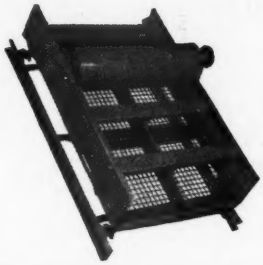

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Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Mach. Works, Aurora, Ind
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER (Mixed) MANUFACTURERS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Corporation, Baltimore, Md.
International Minerals & Chemical Corporation, Chicago
Southern States Phosphate & Fertilizer Co., Savannah, Ga
Virginia-Carolina Chemical Corp., Richmond, Va.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Scar-Lipman & Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

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- Ashcraft-Wilkinson Co., Atlanta, Ga.
- Baker & Bro., H. J., New York City
- Scar-Lipman & Co., New York City
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- Ashcraft-Wilkinson Co., Atlanta, Ga.
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- International Minerals & Chemical Corporation, Chicago, Ill.
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- Scar-Lipman & Co., New York City

NITROGEN SOLUTIONS
- Barrett Div., Allied Chemical & Dye Corp., New York City
- Lion Oil Company, El Dorado, Ark.
- Phillips Chemical Co,, Bartlesville, Okla.
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NITROGENOUS ORGANIC MATERIAL
- American Agriculture Chemical Co., New York City
- Armour Fertilizer Works, Atlanta, Ga.
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NOZZLES—Spray
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PHOSPHATE ROCK
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- Armour Fertilizer Works, Atlanta, Ga.
- Ashcraft-Winkinson Co., Atlanta, Ga.
- Baker & Bro., H. J., New York City
- Davison Chemical Corporation, Baltimore, Md.
- International Minerals & Chemical Corporation, Chicago, Ill.
- McIver & Son, Alex. M., Charleston, S. C.
- Virginia-Carolina Chemical Corp., Richmond, Va.

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- Atlanta Utility Works, The, East Point, Ga.
- Chemical Construction Corp., New York City
- Monsanto Chemical Co., St. Louis, Mo.
- Sackett & Sons Co., The A. J., Baltimore, Md.
- Southern Lead Burning Co., Atlanta, Ga.
- Stedman Foundry and Mach. Works, Aurora, Ind.
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- Titlestad Corporation, Nicolay, New York City

POTASH SALTS—Dealers and Brokers
- American Agricultural Chemical Co., New York City
- Armour Fertilizer Works, Atlanta, Ga.
- Ashcraft-Wilkinson Co., Atlanta, Ga.
- Baker & Bro., H. J., New York City
- International Minerals & Chemical Corporation, Chicago. Ill
- Jackle, Frank R., New York City
- McIver & Son, Alex M., Charleston, S. C.
- Scar-Lipman & Co., New York City

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- American Potash and Chemical Corp., New York City
- Potash Co. of America, New York City
- International Minerals & Chemical Corporation, Chicago.
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PRINTING PRESSES—Bag
- Schmutz Mfg. Co., Louisville, Ky.

REPAIR PARTS AND CASTINGS
- Atlanta Utility Works, The, East Point, Ga.
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SEPARATORS—Air
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SPRAYS—Acid Chambers
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International Minerals & Chemical Corporation, Chicago, Ill.
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McIver & Son, Alex. M., Charleston S. C.
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International Minerals & Chemical Corporation, Chicago, Ill.
U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

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American Agricultural Chemical Co., New York City
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Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
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Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.

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Quickly and Accurately with
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Price $1.25 Postpaid
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317 N. Broad St. Philadelphia 7, Pa.

WILEY & COMPANY, Inc.

Analytical and Consulting Chemists

BALTIMORE 2, MD.

World Resources

(*Continued from page 26*)

greater portion of the world's fertilizer potassium for nearly 100 years. Utilization of these deposits is favored by their large extent, low mining costs, the ease with which the ore can be processed with little or no use of chemical reagents into highly concentrated, directly usable salts which can be shipped economically for long distances, and the recovery of marketable co-products.

Estimates of the world reserves of potassium have generally been made only for lake brines and deposits of water-soluble minerals. Even so, the data are often at variance and are certainly far from complete. The most conservative estimates place the total reserve of potash in these sources at approximately 5,003 million tons, distributed as follows:

1,000,000 Tons of Potash	(K_2O)
Germany	2,495
Palestine, Dead Sea	1,143
Union of Soviet Socialist Rep.	709
France	300
Spain	272
United States	84
TOTAL	5,003

Estimates of the German reserve range as high as 482,700 million tons of water-soluble potash. The figure for the Union of Soviet Socialist Republics relates solely to the deposits in the Solikamsk-Berezniki district and the former southeastern Poland, but large deposits, are known in other areas.

The estimate for the United States includes only the western lake brines and the high-grade deposits of sylvite, carnallite, and langbeinite in the small portion of the New Mexico field that is presently under development. This portion of the New Mexico deposits is estimated to contain an additional 228 million tons of potash in the form of polyhalite and other soluble salts, not economically recoverable at present. Also, large areas in other parts of New Mexico and in Texas and Utah are underlain by extensive potash deposits that can undoubtedly be utilized as further progress is made in mining and processing techniques.

Occurrences of soluble potash in subterranean brines and deposits are known in England, Denmak, western Poland, India, and Saskatchewan Province, Canada. Although such occurrences appear to be unreported in Africa, Australia, South America, and most of Asia, further exploration can be expected to reveal large reserves in some, if not all, of these vast areas.

The world capacity for production of potash from water-soluble sources in 1948-49 is estimated at approximately 4.2 million tons annually. Germany has the largest capacity, followed in order by the United States and France. Presently, the world supply of potash is somewhat below the demand, but this situation is expected to be fully remedied in the near future.

In conclusion, the world has very large resources of nitrogen, phosphorus, and potassium that are economically usable by present methods of recovery. Utilization of additional huge resources of these elements awaits the development of improved and new processes and techniques.

1850

Congratulations

1950

TO THE FERTILIZER INDUSTRY ONE HUNDRED YEARS YOUNG

If pride in achievement is justifiable, the Fertilizer Industry may feel justly proud of its long record of assistance to American agriculture. During its first century of existence great progress has been made.

The coming century presents a many sided challenge:

1. Increasing Populations.
2. Increasing Standards of Living.
3. Increasing Economic Problems.
4. And above all, an Increasing and Urgent Demand for the Preservation of the Fertility and Productivity of our Greatest Heritage—The Good Earth.

We pledge our best efforts to the attainment of all constructive objectives.

P.C.A. SALT of the EARTH RED MURIATE

POTASH COMPANY OF AMERICA
Carlsbad, New Mexico

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MIDWESTERN SALES OFFICE... First National Bank Bldg., Peoria, Ill.
SOUTHERN SALES OFFICE... Candler Building, Atlanta, Ga.

CHART ABOVE SHOWS PRODUCTION OF P.C.A. RED MURIATE USING 1939 AS 100%

Who grows PEACHES like these?

Georgia Growers, of course! They may boast a little but no wonder. They fertilize with . . .

Sul-Po-Mag®
Water-Soluble
Double Sulfate of Potash-Magnesia

Big, beautiful, juicy, flavorful peaches are a tradition in Georgia. Growers in Georgia and in other states, too, are getting large yields and high quality because they use fertilizers containing *Sul-Po-Mag*.

Thousands of farmers throughout the country find that they get earlier maturity, healthier growth, larger acre yields and more profitable production on magnesia-deficient soils by using *Sul-Po-Mag* for fruit, vegetables, cotton, tobacco, grain and other crops.

Sul-Po-Mag supplies potash and magnesia in a properly-balanced combination; both the potash and magnesia are in water-soluble form and are quickly available to crops. You can provide the farmer with magnesia in the most practical and economical form by including *Sul-Po-Mag* in your quality fertilizers.

Sul-Po-Mag is mined and refined exclusively by International at Carlsbad, New Mexico, to help you serve your farm customers better in meeting their problem of growing better crops on magnesia-deficient soils.

SUL-PO-MAG (Water-Soluble Double Sulfate of Potash-Magnesia)
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